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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,319	09/14/2001	Perry F. Bartlett	37921-151292	6689

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DRINKER BIDDLE & REATH
ONE LOGAN SQUARE
18TH AND CHERRY STREETS
PHILADELPHIA, PA 19103-6996

EXAMINER	
NICHOLS, CHRISTOPHER J	
ART UNIT	PAPER NUMBER
1647	

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/830,319	BARTLETT ET AL.	
	Examiner	Art Unit	
	Christopher J Nichols, Ph.D.	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-7 and 14-20* is/are pending in the application.

4a) Of the above claim(s) *2,3 and 14-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 5-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-3,5-7 and 14-20* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Application, Amendments, and/or Claims

1. The Response and Amendment filed 13 August 2004 has been received and entered in full.

2. The Preliminary Amendment filed 24 April 2001 has been received and entered in full.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Withdrawn Objections And/Or Rejections

4. The Objection to the Claims **8, 9,** and **13** as set forth at pp. 2 ¶2 in the previous Office Action (18 February 2004) is *moot* in view of Applicant's cancellation of said claims (13 August 2004).

5. The Rejections of claims **4** and **8-13** as set forth in the previous Office Action (18 February 2004) is *moot* in view of Applicant's cancellation of said claims (13 August 2004).

6. The Rejections of claim **1** under 35 U.S.C. §112 ¶2 as set forth at pp. 10-11 ¶25-27 in the previous Office Action (18 February 2004) is hereby *withdrawn* in view of Applicant's amendments (13 August 2004).

Maintained Objections And/Or Rejections

7. Claims **1** and **5-7** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with

which it is most nearly connected, to make and/or use the invention for the reasons set forth at pp. 2-8 ¶3-17 in the previous Office Action (18 February 2004).

8. Applicant traversed the rejection of the claims on the following grounds: **(a)** the claims have been amended to recite a method of CNS regeneration, growth, and/or development by administration of a genetic molecule which has the effect of increasing the level of the EphA4 receptor in cells occupying a region surrounding the spinal cord, **(b)** genetic molecules that up-regulate the EphA4 receptor can be readily devised, **(c)** it can be reasonably concluded that elevating the levels of EphA4 will result in repair and replacement of CNS axons, and **(d)** EphA4 receptor is involved in CST and locomotion such as ALS.

9. Applicant's arguments have been taken into consideration and are not found persuasive for the following reasons.

10. On "**(a)**", the claims are drawn very broadly to a method of facilitating regeneration, and/or development of a central nervous system in any given mammal via increasing Eph4A receptor levels. But the specification fails to provide any guidance for the successful regeneration, growth, and/or development in any mammal via increasing Eph4A receptor levels. And resolution of the various complications in regards to regeneration, growth, and development in the central nervous system (CNS) are highly unpredictable, one of skill in the art would have been unable to practice the invention without engaging in undue trial and error experimentation. In order to practice the invention using the specification and the state of the art as outlined below, the quantity of experimentation required to practice the invention as claimed *in vivo* would require the *de novo* determination of agents that have the required activity, isolation, characterization, and then extensive and unguided experimentation to correlate with

regeneration, growth, and development in the CNS via an Eph receptor, its functional equivalent, or its ligand. In the absence of any guidance from the specification, the amount of experimentation would be undue, and one would have been unable to practice the invention over the scope claimed.

11. On "**(b)**", while genetic molecule which has the effect of increasing the level of the EphA4 receptor in cells may constitute a fecund ground for investigation, the CAFC ruled in *Genentech Inc. v. Novo Nordisk A/S* (CA FC) **42 USPQ2d 1001** (1997) that patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable. Citing *Brenner v. Manson,* **383 U.S. 519, 536, 148 USPQ 689, 696** (1966) (stating, in context of the utility requirement, that "a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion."). Therefore the CFAC stated that tossing out the mere germ of an idea does not constitute enabling disclosure. While every aspect of a generic claim certainly need not have been carried out by an inventor, or exemplified in the specification, reasonable detail must be provided in order to enable members of the public to understand and carry out the invention. That requirement has not been met in the instant specification with respect to the any genetic molecule which has the effect of increasing the level of the EphA4 receptor in cells which in turns has therapeutic activity for any given spinal cord or motor neuron related disease or injury.

12. On "**(c)**", the art teaches that the CNS is a hostile environment to regeneration and growth. The art recognizes that development is limited to embryonic and early juvenile period after which it is no longer possible in higher vertebrates such as mammals. Jackowski (1995) "Neural injury repair: hope for the future as barriers to effective CNS regeneration become

clearer." British Journal of Neurosurgery **9**: 303-317 teaches that two barriers prevent regeneration, growth, and repair in the central nervous system (CNS): an intrinsic inability of CNS neurons to mount a regenerative response and a CNS environment that is non-supportive or actively inhibitory to neural regeneration (pp. 305-311). Therefore the claims as instantly presented run contrary to the teaching of the art where "regeneration", "growth", and "development" in the CNS have high hurdles to overcome. The instant Specification does not teach nor adequately address how the skilled artisan is to surmount these obstacles when practicing the invention. And as such the claims as instantly presented constitute an invitation to experiment.

13. On "**(d)**", Applicant's argument constitutes conjecture as Lickliter *et al.* (January 1996) "Embryonic stem cell express multiple Eph-subfamily receptor tyrosine kinases." PNAS **93**: 145-150 teaches that the role/function of Eph receptors in adult animals is not known (pp. 149). Thus the skilled artisan is confronted with a massive genus and an inadequate disclosure of a representative number of species with which to practice the invention as claimed. The Specification and prior art do not support any role of EphA4 in the claimed conditions.

14. Claims **1** and **5-7** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention for the reasons set forth at pp. 8-10 ¶18-24 in the previous Office Action (18 February 2004).

15. Applicant traversed the rejection on the following grounds: **(a)** the claims have been amended to recite administration of a genetic molecule which increases the level of EphA4 receptor in target cells.

16. Applicant's arguments have been taken into consideration and are not found persuasive for the following reasons.

17. On "**(a)**", claim 1 recites "a genetic molecule" which a desired effect but the Specification nor the prior art teaches any "genetic molecule" which meets the desired criteria in structure and function. Furthermore the art recognizes that a "genetic molecule" can pertain to chemical entities, nucleic acids, peptide nucleic acids, recombinant vectors, expression vectors, cDNA, genomic DNA, antisense, mRNA, tRNA, rRNA, catalytic RNA, viral vectors, plasmids, cosmids, yeast artificial chromosomes, introns, exons, bacterial artificial chromosomes, retroviral vectors, transformed cell lines, chromosome fragments, transgenes, fusion protein genes, transposons, and synthetic agents; none of which are taught in the Specification or the prior art.

18. To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the product to be used in the method, and any combination thereof. In this case, the only factor present in the claim that is sufficiently disclosed is in the form of a recitation of a desired "genetic molecule" of unknown nature, composition, and structure. The specification does not identify any particular portion of the structure that must be conserved, nor does it provide a disclosure of structure/function correlation. The distinguishing characteristics of the claimed

genus are not described. Accordingly, the specification does not provide adequate written description of the claimed genus.

19. Therefore the full breadth of the claim fails to meet the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision.

Summary

20. No claims are allowed.

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

22. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Christopher James Nichols, Ph.D.** whose telephone number is **(571) 272-0889**. The examiner can normally be reached on Monday through Friday, 8:00 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Brenda Brumback** can be reached on **(571) 272-0961**.

The fax number for the organization where this application or proceeding is assigned is **703-872-9306**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see **http://pair-direct.uspto.gov**. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).

CJN
September 28, 2004

Elizabeth C. Kimmel

ELIZABETH [illegible]
PRIMARY EXAMINER